

A NEW SPECIES OF *EUCARTERIA* LEA (COLEOPTERA: LUCANIDAE) AND NOTES ON THE AFFINITIES OF THE GENUS

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Abstract

Eucarteria subvittata sp. n. is described from localities in the Central Tablelands district of New South Wales and is compared with the generic type species, *E. floralis* Lea. The systematic position of the genus within the Lucanidae is discussed.

Introduction

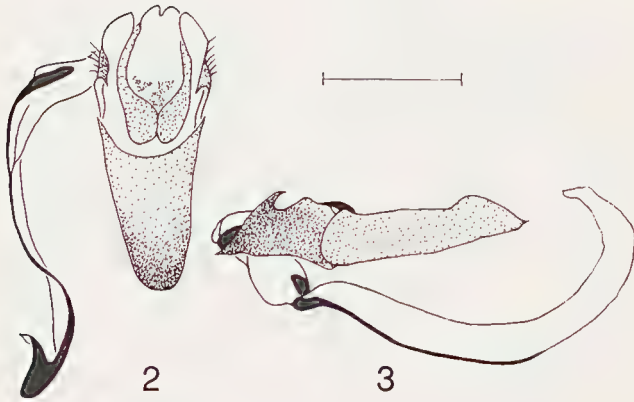
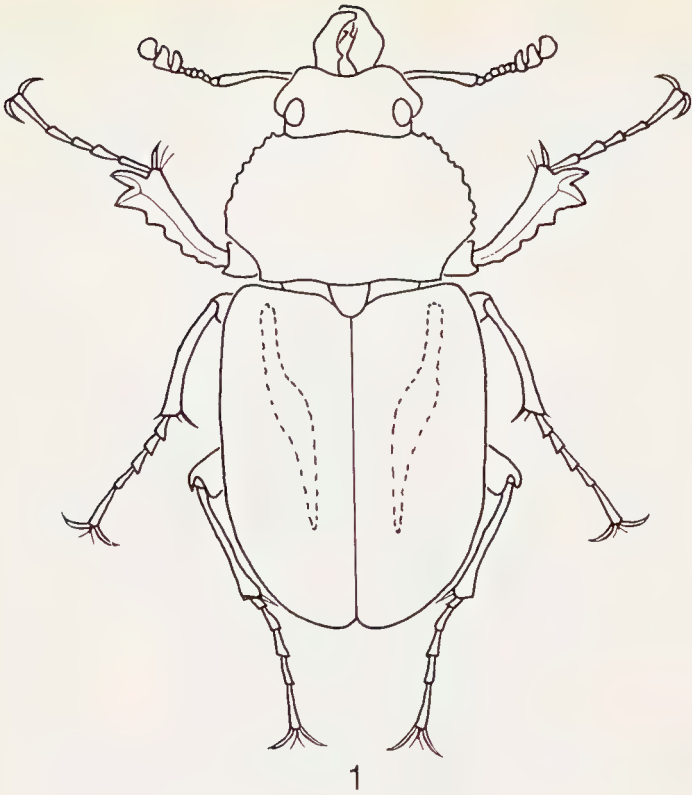
Lea (1914) erected the genus *Eucarteria* for his new species *floralis*, a small, diurnal, flower-visiting stag beetle from the "Dorrigo scrub", New South Wales. Nothing further appears to have been recorded concerning the biology or distribution of this species but recently collected material of *Eucarteria*, from localities to the south of Dorrigo, exists in the Australian National Insect Collection (ANIC), Canberra and in major collections at other centres. However, although the modern specimens broadly agree with the original description of *floralis* and have generally been standing as Lea's species, a recent examination of Lea's type material, from the South Australian Museum (SAM), has revealed that they belong to a distinct (though closely related) new species, described below.

Eucarteria subvittata sp. n. (Figs 1-5).

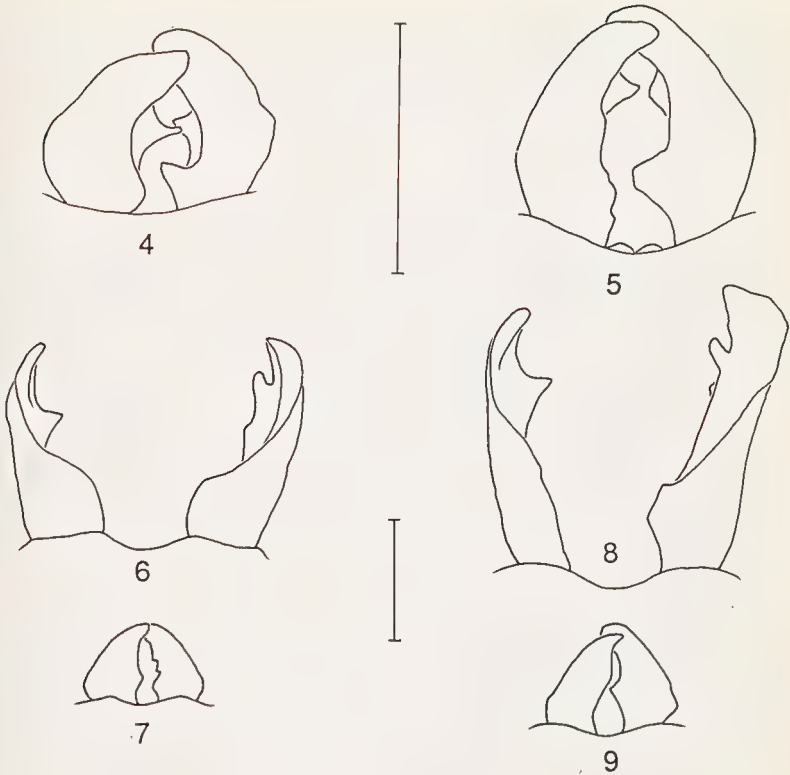
Types. NEW SOUTH WALES: holotype ♂, 31°53'S 151°32'E: Dilgry River, Barrington Tops State Forest, 15-16.xi.1981, T. Weir and A. Calder, in the Australian National Insect Collection (ANIC), CSIRO, Canberra, ACT. Paratypes, 4 ♂♂, same data as holotype (except 2, with T. Weir as the only collector), in ANIC; 3 ♂♂, 31°54'S 151°33'E: Moppy Lookout, Barrington Tops State Forest, 18.xi.1981, A. Calder, in ANIC; 1 ♂, Wilson River, 48 km NW of Port Macquarie, N.S.W., 29.xii.1971, K.R. Pullen, in ANIC; 3 ♂♂, Mount Boss State Forest, via Wauchope, 11.i.1984, C. Williams & C. Cross, in the Department of Primary Industries (DPI) Collection, Mareeba; 1 ♂, vicinity of Banda Banda Beech Reserve, Mount Boss State Forest, 11.i.1984, C. Williams & C. Cross, in the Zoological Collection of the University of Florence (ZCUF), Italy; 6 ♂♂, Werrikimbe National Park, 2.iii.1985, K. Pullen, 1 in ZCUF, 1 in the South Australian Museum (SAM) Adelaide, 4 in the author's collection (now lodged with ANIC); 1 ♂, vicinity of Polblue Swamp, Barrington Tops State Forest, 25.xi.1986, C. Reid, in ANIC.

Male: mostly dark brownish-black, with slight bronze reflections; antennae, palpi, canthi, pronotal margins, elytral vittae and tibiae lighter, reddish-brown; scales grey.

Head transverse, coarsely punctate, squamose beside eyes; mandibles showing little allometric variation, short, concave, rugose, weakly bicuspidate internally; right more markedly than left; apex of left mandible



Figs. 1-3. *Eucarteria subvittata* sp. n. (1) general habitus, based on a paratype male from Werrikimbe National Park, N.S.W. Natural length = 9 mm. (2) aedeagus of holotype in ventral and (3) left lateral views. Scale-line = 1 mm.



Figs 4-9. *Eucarteria* spp., male and female mandibles: (4) *subvittata* sp. n., holotype male; (5) *subvittata* sp. n., paratype male; (6) *floralis* Lea, lectotype male; (7) *floralis* Lea, paralectotype female; (8) *floralis* Lea, topotype male; (9) *floralis* Lea, topotype female. Scale-lines = 1 mm.

overlapping that of right when clenched; eyes narrowly divided by canthi; mentum small, flat, triangular, largely covered with scales. Pronotum transverse (ca 3.5 x 2.5 mm), convex, coarsely punctate and sparsely squamose except on disc, widest at about hind third; margins crenulate, regularly rounded on front two-thirds, then obliquely contracted to base. Elytra rugose, lightly and irregularly striate on disc; intervals sparsely squamose, apical declivity more densely so; humeri raised; apices of intervals 4-8 combining to form a slight tumidity before declivity; a poorly defined, oblique pale vitta on each, extending from humerus to apical declivity but not quite reaching suture. Legs hirsute; fore tibiae externally with 3 large and 4-5 small teeth; mid and hind tibiae unarmed, the former

slightly curved, latter straight. Aedeagus (Figs 2-3) mostly strongly sclerotised, except median lobe and part of its everted sac; sac broad, sinuous and bandlike throughout its length; parameres circularly excised and strongly falcate in lateral view. Length (including mandibles) 7.1-9.4 mm; max. width 3.1-3.7 mm.

Female: unknown.

Diagnostic notes

This new species is evidently closely related to *Eucarteria floralis* but it may be distinguished by its smaller size, dull and generally darker, integument, coarsely rugose sculpture, extensive squamose vestiture and shorter and less elaborate male mandibles. In *floralis* the integument is of a light, shining brown, the elytral vittae are of a clearer yellow and are more defined, and squamae are restricted to the head in males and the head and pronotal front angles in females. The aedeagi of the 2 species are closely similar in structure but the parameres in *subvittata* are somewhat more markedly falcate in lateral view. From the limited distributional data currently available, it would appear that these species are parapatric in the mountains of eastern New South Wales, with *subvittata* occupying the more southern range.

It is rather surprising that the extensive type series of *subvittata* comprises males only (as confirmed by dissections), whereas that of *floralis* includes both sexes in equal numbers. Since some males of *subvittata* are labelled as having been found on flowers and Lea (1914) indicated that his species was floricolous, it seems likely that females of *subvittata* may have more cryptic habits. Moreover, in view of the comparatively limited development, in *subvittata*, of the male mandibles, which are scarcely more elaborate than those of female *floralis*, it also appears probable that sexual dimorphism is at a minimum in the new species.

Eucarteria floralis Lea (Figs 6-9)

Lea (1914) did not indicate how many specimens he had before him but as he mentioned variation in both sexes, his type series must have included at least 2 males and 2 females. Neither did he designate unequivocally a holotype, although he did quote a type number (I. 2729) and indicated that his type series came from "Dorrigo, N.S.W. (H. J. Carter, from R. J. Tillyard and W. Heron)". The material now standing with this number in SAM comprises 3 males and 3 females, including a male and a female, each currently bearing a small label printed "Type", together with another indicating "*floralis* Lea Comboyne", apparently in Lea's handwriting. The male also carries a handwritten cabinet label indicating "*Eucarteria floralis* Lea N.S.Wales. I. 2729", in agreement with the original citation.

It is not entirely clear why Lea should have labelled his chosen "types" as having come from Comboyne, when this locality was not mentioned under the original diagnosis. However, it seems likely that he took this action

subsequently, perhaps much later, when he was preparing his collection for incorporation in SAM, and that he had suffered a lapse of memory concerning the original type locality. It also appears, from the forms of the mandibles and canthi, that these chosen specimens were not those upon which he based his published illustrations. Moreover, it should be noted that Comboyne may well prove to be a false locality record for his species, since it is now clear that this celebrated collecting area is well within the known range of *E. subvittata*.

In these circumstances it was necessary to set aside Lea's apparent choices and to select an alternative as lectotype, but the matter was further complicated by the fact that all but one (a female) of the six available specimens in SAM had evidently been subjected to subsequent re-curation: a pair had been depinned and carded together and most labels throughout the series carried multiple pinholes. Thus there was no guarantee that any of these specimens remained as originally mounted and labelled. After careful consideration, I therefore selected (p. 9 in Moore and Cassis 1992) and labelled the male of the carded pair as Lectotype and the female as a Paralectotype. These specimens, which appear to be those upon which Lea's original illustrations were based, also currently carry a printed data label "Dorrigo/N.S.Wales", a printed "cotype" and a handwritten cabinet label "*Eucarteria floralis* Lea/ N.S.Wales./ 16900", with "Cotype" added in red.

An additional confirmed locality for this species is provided by 2 male specimens on loan from the collections of Mr Hughes Bomans (Taulignan, France) and of the Queensland Museum, with the following data: "Gibraltar Ra. S(tate) F(orest), 30.xi.62, C.W. Frazier" and "Gibraltar Ra. N(ational) P(ark), 10.xi.1980, G. Monteith, respectively.

The size ranges (overall lengths, including mandibles) over the material before me are: ♂♂, 8.5-11.6 mm; ♀♀ 8.2-8.6 mm. Lea (1914) gave 7.5-11 mm and 7-8 mm, respectively.

Systematic position of *Eucarteria*

The permanently everted internal sac of the aedeagus and the well developed ocular canthi place this genus in the subfamily Lucaninae (Holloway 1968) but as a satisfactory tribal classification within this subfamily has not yet been developed, it is not possible to define its systematic position further. However, on the basis of the broad, bandlike form of the everted sac and the lateral excision of the parameres, together with the 3-lamellate antennal club and general habitus, the monotypic and endemic *Cacostomus* Newman (type: *squamosus* Newman) would appear to be the closest genus, at least within the Australian fauna. In the related and endemic *Rhyssonotus* Macleay, the parameres are not excised and the everted sac tapers to a terminal flagellum in the type species [*nebulosus* (Kirby)] and in 5 of 6 others listed as valid by Moore and Cassis (1992) (only *grandis* Lea being unavailable for study). Moreover, the antennal club

in this genus is less markedly differentiated than in *Eucarteria* and is composed of 6 serrate to shortly lamellate segments.

Acknowledgments

I thank Dr E.G. Matthews (SAM) for the loan of the type material of *Eucarteria floralis* and for helpful background information concerning it; Mr H. Bomans (Taulignan) and Dr G.B. Monteith (Queensland Museum) for making their specimens of *E. floralis* available; and Dr A. Bartolozzi (ZCUF) (who had also recognised the existence of a new species) and Mr R.I. Storey (DPI, Mareeba) for the loan of additional material of *E. subvittata*.

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